

THAT WHICH IS CLAIMED IS:

1. An apparatus to inject steam into a hydrocarbon effluent passing through a TLE cone of a hydrocarbon cracking furnace, said apparatus comprising:
 - (a) at least one injection probe, which is connected at an angle in a range of about 30 to
5 about 60 degrees to said TLE cone; and
 - (b) a distribution nozzle, which is connected to said end of said injection probe,
 wherein said injection probe and distribution nozzle protrude into said TLE cone by
 a distance in the range of about 1% to about 10% of the radius of the TLE cone.
2. An apparatus as recited in claim 1 wherein said angle is about 45 degrees.
- 10 3. An apparatus as recited in claim 2 wherein there are six injection probes located 60
 degrees apart around the circumference of said TLE cone.
4. An apparatus as recited in claim 1 whereby said injection probe and distribution nozzle
 protrude into said TLE cone by a distance of about 1% to about 3% of the radius of the
 TLE cone.
- 15 5. An apparatus as recited in claim 1 wherein said injection probe is located at a distance
 from the TLE tubesheet in a range of about 12 to about 36 inches.
6. A method to inject steam in a hydrocarbon effluent passing through the TLE cone of a
 hydrocarbon cracking furnace to reduce formation of a coke material on the TLE
 exchanger tubesheet, the method comprising:
20 injecting steam through at least one injection probe wherein said injecting is
 accomplished by said apparatus in claim 1.
7. A method of injecting steam as recited in claim 6 wherein the steam pressure is in a
 range of about 30 psig to about 150 psig.

8. A method of injecting steam as recited in claim 7 wherein the steam pressure is in a range of about 30 psig to about 50 psig.
9. A method of injecting steam as recited in claim 6 wherein steam flow is in an amount ranging from about 0.5% to about 10% of the flow of the hydrocarbon effluent.
- 5 10. A method of injecting steam as recited in claim 9 wherein steam flow is in an amount in a range of about 1% to about 3% of the flow of the hydrocarbon effluent.

